Claims

1. Multiple insertion head for mounting components onto substrates, with

- a carrier (200) which is arranged such that it can rotate about a rotational axis, and
- a plurality of receiving tools (210) that are arranged such that they can be moved in a mounting direction at an angle to the rotational axis (D); said receiving tools being arranged on the carrier (200) and used to receive the components (300),

with each receiving tool (210) being provided with one or a plurality of active drives (220, 228) and/or sensors (217).

2. Multiple insertion head according to claim 1, with each receiving tool (210) having its own rotary drive (228) by means of which received components (300) can in each case be rotated about a tool axis (215) arranged at an angle to the rotational axis (D) of the multiple insertion head.

3. Multiple insertion head according to claim 1, with each receiving tool (210) having a vacuum generator (220).

4. Multiple insertion head according to claim 3, with the vacuum generators (220) being Venturi tubes and the carrier (200) has a hollow shaft (110) running coaxially to the rotational axis (D) to which the receiving tools (210) are fitted and compressed air can be conveyed through the hollow shaft (110) of the carrier to the Venturi tubes.

5. Multiple insertion head according to one of the claims 3 or 4, with the Venturi tubes being connected to a regulator to control the pressure.

6. Multiple insertion head according to one of the claims 1 to 5, with a blast air vacuum device being provided which in a

receiving mounting position (A) of one of the receiving tools (210), in which components can be received or mounted by means of the receiving tool (210) located in the receiving mounting position (A), with which the receiving tool (210) located in the receiving mounting position (A) is connected in each case and by means of which an additional vacuum can be applied or generated to the receiving tools (210) for receiving the components or in addition a blast air impulse while mounting the components in the receiving tool (210) located in the receiving mounting position (A).

7. Multiple insertion head according to claim 1 to 6, with the receiving tools (210) in each case having a tool shaft (215) embodied as a hollow shaft running coaxially to the tool axis and with each receiving tool (210) having a rotary sensor (217) by means of which the angle position of the tool shaft (215) can be detected.

8. Multiple insertion head according to claim 7, with the tool shafts (215) being provided in each case with vacuum pipettes (260) at their distal end range.

9. Multiple insertion head according to one of the claims 1 to 8, with a rotationally symmetrical energy and data transmission device being arranged between the carrier (200) and a housing (100) of the multiple insertion head, and by means of which the active drives (220, 228) and/or sensors (217) can be supplied with energy and by which the data from the sensors and the data to the sensors can be transmitted with a first transmitter part being permanently fitted to the housing (100) of the multiple insertion head and a second transmitter part being permanently fitted to the carrier (200) in such a way that it can rotate.

10. Multiple insertion head according to claim 9, with the

energy and data transmission device having at least one slip ring.

11. Multiple insertion head according to claim 9, with the energy and data transmission device in each case having one pair of electromagnetic transmitters (410, 420) and one pair of capacitive transmitters (415, 425) which are in each case arranged rotationally symmetrical around the rotational axis of the multiple insertion head and by means of which there is non-contact transmission of both the energy and the data.

12. Multiple insertion head according to claim 11, with the capacitive transmitter (415, 425) is in this case embodied as a plate-shaped antenna in the first transmitter part and in the second transmitter part and in which case in the first transmitter part the electromagnetic transmitter can have a circular magnetically conductive body (410) with a u-shaped cross section open in the direction of the carrier, and a circular magnetically conductive body (420) in the second transmitter part with, in essence, a rectangular cross section which is arranged in such a way in the opening of the first transmitter part that the direction of the magnetic field used for the transmission of energy is, in essence, at right angles to the direction of the electrical field used for the transmission of data.

13. Multiple insertion head according to one of the claims 9 to 12, with at least one polished disk (150, 250) being provided on the housing (100) and on the carrier (200) in each case in such a way that the polished disks (150, 250) are arranged immediately next to each other so that the compressed air and a vacuum can be applied from external vacuum generators to the active drives (220) of the carrier.

14. Multiple insertion head according to one of the claims 1

to 13, with the carrier (200) having at least one control device (230) for controlling and/or regulating the active drives (220, 228) or sensors (217).

15. Multiple insertion head according to claim 14, with the control unit (230) having at least one digital signal processor by means of which one or a plurality of the active drives (220, 228) or sensors (217) can be controlled.

16. Multiple insertion head according to one of the preceding claims, with a linear motor (500) also being provided by means of which a receiving tool (210) found in the receiving mounting position (A) can be moved in the mounting direction provided that the linear motor (500) is engaged in the receiving tool.

17. Multiple insertion head according to claim 16, with an engaging element (212) being provided in each receiving tool which can engage in an engaging piece (510) of the runner (520) of the linear motor (500).

18. Multiple insertion head according to one of the claims 16 or 17, with an additional retracting means interacting with the linear motor (500) by means of which the runner (520) of the linear motor is pretensioned by means of a spring tension against the force of gravity and in which this pretensioning is compensated for by compressed air when the insertion head is in operation.